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UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 487

Contribution from the States Relations Service
A. C. TRUE, Director

Washington, D. C. PROFESSIONAL PAPER January 25, 1917

JUDGING HORSES AS A SUBJECT OF INSTRUCTION IN SECONDARY SCHOOLS

By

H. P. BARROWS, Assistant in Agricultural Education,
States Relations Service

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INTRODUCTION.

A study of types and breeds of horses is considered an essential part of the general course in animal husbandry in secondary schools. Considerable attention and interest are centered around the scoring and judging of horses in connection with the study. It is the aim of this bulletin to give such specific instructions as will aid in making this work more practical.

The subject matter which follows is not original. Leading authorities have been consulted freely.

TEACHING THE JUDGING OF HORSES.

Value and place of the subject in the curriculum.—Practical work in stock judging has done much to arouse interest and enthusiasm in animal husbandry on the part of the student. It has also done a great deal toward allaying prejudice and developing sympathy among those who looked upon the teaching of agriculture as "book farming." Judging horses in connection with a study of types and breeds is an essential foundation work for a study of breeding, feeding, training, and general management of horses which should follow in the course.

[1] Prepared under the direction of C. H. Lane, Chief Specialist in Agricultural Education.

NOTE.—This bulletin is intended for the use of teachers of secondary agriculture.

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It is not likely that all members of any class will develop into experts in horse judging. Only a comparative few may have the inherited talents, which with years of training will rank them as masters in the prize ring. It is not the aim of the high-school course to develop specialists. It should strive, however, to give such instruction as will create a greater interest in the subject and such training as may be applied with profit in buying and selling horses for the farm.

Common method of training.—Boys who have an inborn love for and interest in horses take notice of each horse they see, intuitively making comparisons and estimates of values. Such boys are fortunate indeed if they have the privilege of associating with men who know horses well, and the opportunity of attending fairs and visiting other places where good individuals may be seen. Careful observation with large numbers has resulted in remarkable ability on the part of some of these enthusiasts, which has been of great value in making comparisons in the show ring and in estimating values at sales. School work in judging will not take the place of general observation and constant practice, but should supplement it and inspire it in the case of those who may lack interest.

Classroom instruction v. practice.—Although stock judging is essentially an art to be learned by practice, under supervision, it is based upon scientific principles which should be given careful study. A discussion of the principles underlying the judging of draft horses should be taken up in the classroom before practical judging begins. The ideals of to-day are the types of to-morrow, hence the importance of establishing in the minds of future judges sound ideals based upon scientific principles. A discussion of principles and points arising in practice may be profitable in the presence of the animal judged, but as a matter of convenience such discussion is often deferred until the next classroom meeting.

Use of illustrative material.—The teacher should keep in mind that the student learns largely through what he sees. In establishing ideals of animal types nothing has value equal to living specimens which approach perfection. Inasmuch as horses which approach ideal types are not common nor convenient to keep before the students, the teacher should make use of an abundance of illustrative material. Pictures of prize winners appear from time to time in all good live-stock journals. (Fig. 1.) If files are not kept of these papers the good pictures should be clipped and mounted upon cards for classroom use. A projection lantern with an opaque attachment will be found invaluable in this work.[1]

[1] Lantern slides illustrating types and breeds of horses, including the illustrations of this bulletin, may be obtained from the office of Agricultural Instruction of the States Relations Service. Charts and stencils for use on blackboards may be made by tracing the outline of a diagram thrown on paper by a lantern.

CLASSROOM DISCUSSION.

The horse as a machine.—All farm animals may be considered as machines which have definite work to do. We may look upon the horse as a mechanism which converts raw material in the form of forage and grain into work. In other words, the latent energy in the food is made to do work by means of the living mechanism we call a horse. A machine has value according to its efficiency in doing work. Before we can estimate the efficiency of this particular

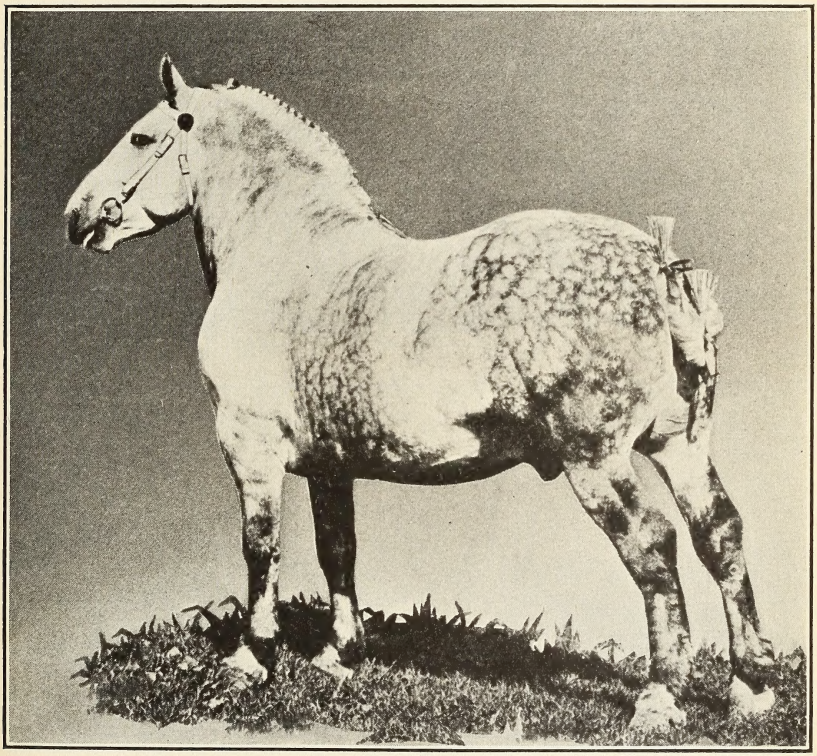

FIG. 1.—A good draft horse.

machine we must know something about its structure in relation to the work it has to do.

Anatomy as a basis for study.—We may consider the horse as a mechanism in which latent energy in food is made active in muscles which work upon bones as levers, the operation being stimulated and controlled by the nervous system. It may be necessary to review at this time the fundamentals of physiology which have to do with the use of food. Charts showing the skeleton of a horse and the relation of muscles to bones will prove almost indispensable in giving a clear

understanding of the anatomy of the horse. (Fig. 2.) The different classes of levers should be demonstrated to the class, after which the students may point out the application of the physical principles involved in the movements of the horse. It is important to consider the relative lengths of bones and muscles in their relation to strength and the transmission of power. The manner of attachment of muscles to bones should be emphasized also in relation to its effect upon the

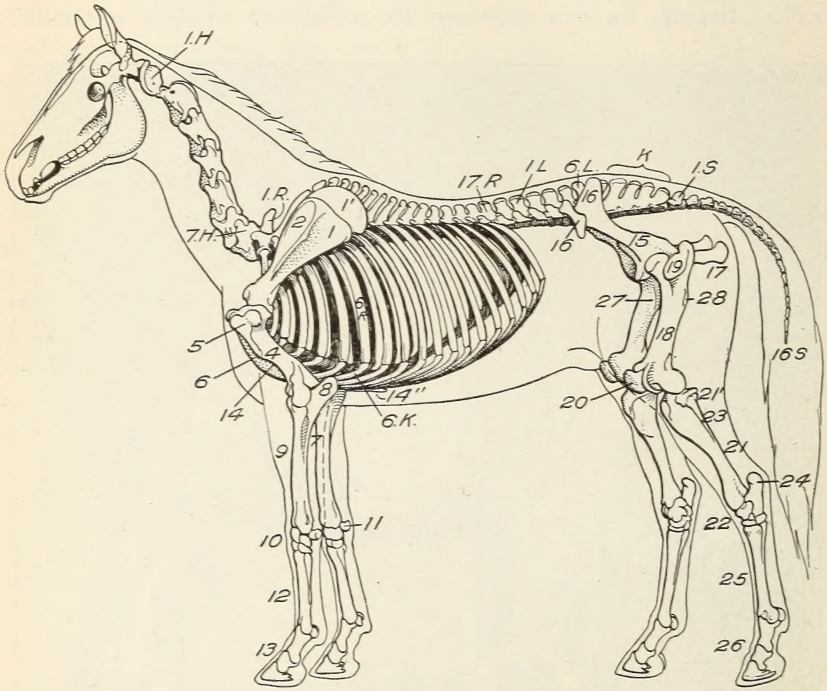

FIG. 2.—Skeleton of horse with outline of contour of body. (From Sisson, The Anatomy of the Domestic Animals.) 1 H, Atlas; 7 H, seventh cervical vertebra; 1 R, first thoracic vertebra; 17 R, seventeenth thoracic vertebra; 1 L, first lumbar vertebra; 6 L, sixth lumbar vertebra; K, sacrum; 1 S, first coccygeal vertebra; 16 S, sixteenth coccygeal vertebra; 6 R, sixth rib; 6 K, costal cartilage; 1, scapula; 1′, cartilage of scapula; 2, spine of scapula; 4, humerus; 5, lateral tuberosity of humerus; 6, deltoid tuberosity; 7, shaft of ulna; 8, olecranon; 9, radius; 10, carpus; 11, accessory carpal bone; 12, metacarpus; 13, digit; 14, sternum; 14″, xiphoid cartilage; 15, ilium; 16, 16, angles of ilium; 17, ischium; 18, femur (shaft); 19, trochanter major; 20, patella; 21, tibia (shaft); 21′, lateral condyle of tibia; 22, tarsus; 23, fibula; 24, tuber calsis; 25, metatarsus; 26, digit; 27, trochanter minor of femur; 28, trochanter tertius of femur.
(After Ellenberger-Baum, Anat. für Kunstler.)

power to do work. Throughout the discussion a comparison of the structure underlying speed should be made with that form associated with strength. The charts should aid the students in understanding the extent to which the form of a horse depends upon the skeleton and to what extent the muscles contribute to form. The structure of bones and muscles do not determine altogether the working of the

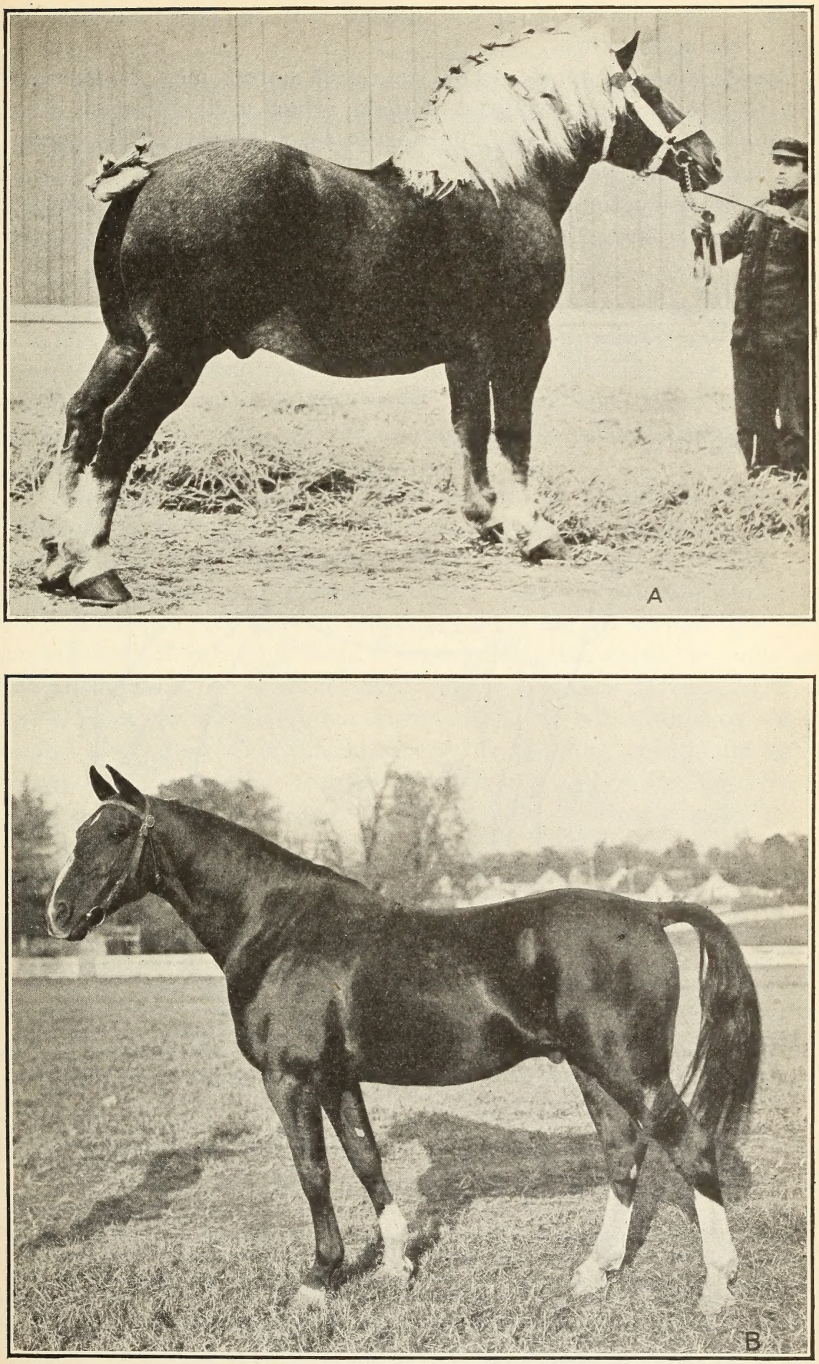

FIG. 3.—Draft horse (upper) contrasted with light-harness horse (lower).

machine. Much depends upon the nervous organization of the animal. The relation of this organization to temperament may be made clear at this time.

Classification of horses.—The breeds of horses may be grouped according to the work required of them. Such a classification gives us light-harness horses, heavy harness or coach horses, saddle horses, draft horses, and ponies.[1]

Other classifications may be used in the show ring and market. While smaller horses may be used on the farm and for other work

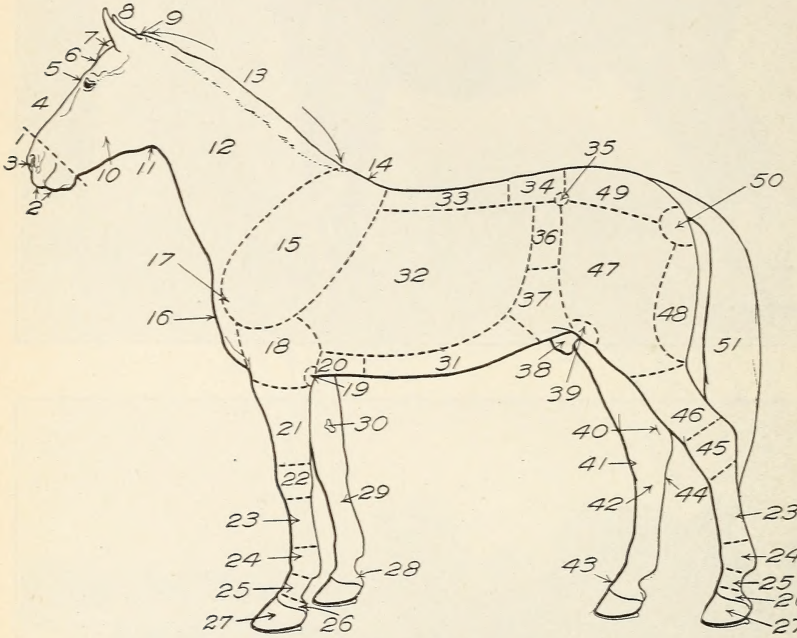

FIG. 4.—Regions of the horse: 1, Muzzle; 2, lips; 3, nostril; 4, face; 5, eye; 6, forehead; 7, foretop; 8, ears; 9, poll; 10, jaw; 11, throatlatch; 12, neck; 13, crest; 14, withers; 15, shoulder; 16, breast; 17, point of shoulder; 18, arm; 19, elbow; 20, fore flank; 21, forearm; 22, knee; 23, cannon; 24, fetlock joint; 25, pastern; 26, coronet; 27, feet; 28, seat of side bone; 29, seat of splint; 30, chestnut; 31, abdomen; 32, ribs; 33, back; 34, loin; 35, point of hip; 36, coupling; 37, hind flank; 38, sheath; 39, stifle joint; 40, seat of thoropin; 41, seat of bog spavin; 42, seat of bone spavin; 43, seat of ring bone; 44, seat of curb; 45, hock; 46, gaskin; 47, thigh; 48, quarter; 49, group; 50, point of buttock; 51, tail.

which requires heavy pulling, an animal is not considered a draft horse unless it weighs over 1,500 pounds. (Fig. 3.)

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[1] The draft horse is chosen as a type to illustrate methods of teaching because of its importance in connection with farming. As the light-harness horse is also important in all rural communities, a score card and descriptive matter pertaining to that type is given. Methods of teaching are much the same for all types of horses. In some districts the heavy harness and saddle horses may be important enough to give special consideration. Score cards and descriptive matter pertaining to these types will be found in the general references given.

The modern draft horse.—The modern draft horse is the result of a demand for great power in hauling heavy loads. This power is associated with weight and has been gained at a sacrifice of speed. While the breeding of draft horses is increasing in the United States, this country has received all of its draft breeds from Europe and is still importing a great many of its breeding animals. All of the draft breeds have distinctive breed characteristics which may be considered by the class after a general consideration of type. All draft breeds conform to the type to be considered.[1]

Terms used in judging.—Before proceeding with a study of the draft type, the student should learn the names of the parts of a horse. It is not wise to assume that the high-school students knows all the terms used in judging. (Fig. 4.) An outline drawing may be used to designate the names of the parts. If drawn upon the blackboard the names of the parts may be erased and the students asked to fill them in.

The score card.—Some time may be used by the students in the classroom in becoming familiar with the score card which they are to use. They should understand that the score card is a detailed description of a perfect animal designed to aid them in establishing an ideal. The card will also aid them in examining an animal in a systematic manner and give them a sense of relative values in judging. Many different score cards for draft horses have been devised. Variation in score cards is likely to continue, as there will always be a difference of opinion upon the relative value of minor points and upon forms of grouping. The forms given here are used by the Iowa State College. Similar forms are used in a number of other schools.[2]

Students' score card.

DRAFT HORSES.

Scale of points for gelding.	Perfect score.	Students' score.	Corrected score.
1. Age			
General appearance—16 points:			
2. Height			
3. Weight, over 1,750 pounds. Score according to age	4		
4. Form, broad, massive, low set, proportioned	4		
5. Quality, bone clean, yet indicating sufficient substance; tendons distinct, skin and hair fine	4		
6. Temperament, energetic, good disposition	4		
Head and neck—6 points:			
7. Head, lean, medium size	1		
8. Muzzle, fine, nostrils large; lips thin, even	1		
9. Eyes, full, bright, clear, large	1		
10. Forehead, broad, full	1		
11. Ears, medium size, well carried	1		
12. Neck, muscled; crest high; throat latch fine; windpipe large	1		

[1] For a description of breeds see Breeds of Draft Horses, U. S. Dept. Agr., Farmers' Bul. 619 (1914).

[2] Score cards may be obtained from most of the State agricultural colleges.

Students' score card—Continued.

DRAFT HORSES—Continued.

Scale of points for gelding.	Perfect score.	Students' score.	Corrected score.
Forequarters—25 points:			
13. Shoulders, sloping, smooth, snug, extending into back	2		
14. Arm, short, thrown forward	1		
15. Forearm, heavily muscled, long, wide	2		
16. Knees, wide, clean cut, straight, deep, strongly supported	2		
17. Cannons, short, lean, wide; sinews large, set back	2		
18. Fetlocks, wide, straight, strong	1		
19. Pasterns, sloping, lengthy, strong	3		
20. Feet, large, even size, straight; horn dense, dark color; sole concave; bars strong; frog large, elastic; heel wide, high, one-half length of toe	8		
21. Legs, viewed in front a perpendicular line from the point of the shoulders should fall upon the center of the knee, cannon, pastern, and foot; from the side, a perpendicular line dropping from the center of the elbow joint should fall upon the center of the knee and pastern joints and back of hoof	4		
Body—9 points:			
22. Chest, deep, wide, low; large girth	2		
23. Ribs, long, close, sprung	2		
24. Back, straight, short, broad	2		
25. Loin, wide, short, thick, straight	2		
26. Underline, flank low	1		
Hindquarters—34 points:			
27. Hips, smooth, wide	2		
28. Croup, long, wide, muscular	2		
29. Tail, attached high, well carried	1		
30. Quarters, deep, heavily muscled	3		
31. Gaskins or lower thighs, wide muscled	2		
32. Hocks, clean cut, wide, straight	8		
33. Cannons, short, wide; sinews large, set back	2		
34. Fetlocks, wide, straight, strong	1		
35. Pasterns, sloping, strong, lengthy	3		
36. Feet, large, even size, straight; horn dense, dark color; sole concave; bars strong; frog large, elastic; heel wide, high, one-half length of toe	4		
37. Legs, viewed from behind, a perpendicular line fron the point of the buttock should fall upon the center of the hock, cannon, pastern, and foot; from the side, a perpendicular line from the hip joint should fall upon the center of the foot and divide the gaskin in the middle, and a perpendicular line from the point of the buttock should run parallel with the line of the cannon	6		
Action—10 points:			
38. Walk, smooth, quick, long, balanced	6		
39. Trot, rapid, straight, regular	4		
Total	100		

LIGHT HORSES.

Scale of points for gelding.	Perfect score.	Students' score.	Corrected score.
1. Age			
General appearance—12 points:			
2. Weight			
3. Height			
4. Form, symmetrical, smooth, stylish	4		
5. Quality, bone clean, fine, yet indicating sufficient substance; tendons defined, hair and skin fine	4		
6. Temperament, active, good disposition	4		
Head and neck—6 points:			
7. Head, lean, straight	1		
8. Muzzle, fine, nostrils large, lips thin, even	1		
9. Eyes, full, bright, clear, large	1		
10. Forehead, broad, full	1		
11. Ears, medium size, pointed, well carried, and not far apart	1		
12. Neck, muscled; crest high; throat latch fine; windpipe large	1		
Forequarters—23 points:			
13. Shoulders, long, smooth, with muscle; oblique, extending into back and muscled at withers	2		
14. Arm, short, thrown forward	1		
15. Forearm, muscled, long, wide	2		
16. Knees, clean, wide, straight, deep, strongly supported	2		

Students' score card—Continued.

LIGHT HORSES—Continued.

Scale of points for gelding.	Perfect score.	Students' score.	Corrected score.
Forequarters—23 points—Continued.			
17. Cannons, short, wide; sinews large, set back	2		
18. Fetlocks, wide, straight	1		
19. Pasterns, strong, angle with ground 45°	3		
20. Feet, medium, even size, straight; horn dense; frog large, elastic; bars strong; sole concave; heel wide, high	6		
21. Legs, viewed in front a perpendicular line from the point of the shoulders should fall upon the center of the knee, cannon, pastern, and foot. From the side, a perpendicular line dropping from the center of the elbow joint should fall upon the center of the knee and pastern joints and back of hoof	4		
Body—9 points:			
22. Chest, deep, low, large girth	2		
23. Ribs, long, sprung, close	2		
24. Back, straight, short, broad, muscled	2		
25. Loin, wide, short, thick	2		
26. Underline, long; flank let down	1		
Hindquarters—30 points:			
27. Hips, smooth, wide, level	1		
28. Croup, long, wide, muscular	2		
29. Tail attached high, well carried	1		
30. Thighs, long, muscular, spread, open angled	2		
31. Quarters, heavily muscled, deep	2		
32. Gaskins or lower thighs, long, wide, muscular	2		
33. Hocks, clearly defined; wide, straight	7		
34. Cannons, short, wide; sinews large, set back	2		
35. Fetlocks, wide, straight	1		
36. Pasterns, strong, sloping	2		
37. Feet, medium, even size; straight; horn dense; frog large, elastic; bars strong; sole concave; heel wide, high	4		
38. Legs, viewed from behind a perpendicular line from the point of the buttock should fall upon the center of the hock, cannon, pastern, and foot. From the side, a perpendicular line from the hip joint should fall upon the center of the foot and divide the gaskin in the middle; and a perpendicular line from the point of the buttock should run parallel with the line of the cannon	4		
Action—20 points:			
39. Walk, elastic, quick, balanced	5		
40. Trot, rapid, straight, regular, high	15		
Total	100		

PRACTICE JUDGING.

Preparing for a judging trip.—Exercises in stock judging, like other field trips, are often failures because proper preparation is not made for them. The teacher should know beforehand where he is going and what he is going to do. If possible, the animal chosen for the first lesson should approach the perfect draft type, as it will aid in fixing the ideal in the minds of the students. Horses should be selected which may be easily handled, especially for the first trip. Arrangements should be made with the owner so that the horse will be ready, and in order that there will be no misunderstanding upon taking the class to his premises. It may be possible to have the horse brought to the school; if this may be arranged it will save a good deal of time for the class. It is difficult to judge a horse properly without plenty of room. Wet, muddy barnyards should be avoided. The instructor will find it to his advantage to go over the animal he intends to use in a thorough manner before the class judges it. When

comparative judging is practiced it is especially important that the teacher know the animals and their relative merits well.

If students have had no experience in judging horses it will be well to use the first judging period in learning how to approach the animal, in checking up what they have learned about naming the parts, and in going over the card with the instructor. If the class has been studying light horses the first period may be spent in comparing a draft animal with a light-harness horse.

FIG. 5.—Student feeling legs of a horse to determine quality.

How to examine a horse.—The horse should be led out to a well-lighted place where there is plenty of room for the students to walk all around it at some distance. In judging horses the eye is the chief factor in determining values, the hand being used merely to assist the eye. (Fig. 5.) Students will need to use their hands at first, especially in determining quality as relating to the coat and in detecting unsoundness. After some experience the eye will reveal much that required the use of the hand at first. The value of accurate first impressions should be emphasized. If the student has an ideal draft

horse in mind he will be impressed at once as to whether the animal before him conforms to that type or not. His first impression will determine largely his judgment as to the score given under general appearance. Whether the student judges the action of the horse before making a detailed examination will depend upon the score card used. In some cards action is included under general appearance.

Using the score card.—After the students have become familiar with the card and the method of approaching the animal they may make individual scores. Each student should work independently. Conversation and comparison of scores should be avoided while the work is being done. The teacher should use his judgment in determining whether his time may be spent better in aiding the students or in scoring the animal as a basis for checking upon their results. One of the chief purposes in using a score card is to train the student in observation, so no details should be overlooked. The card will give the score for perfection in the various parts. The student will enter a score which represents the amount which he judges the animal to be deficient. The sum of these deficient amounts subtracted from 100 gives the score of the animal. As a rule no defect should result in a cut to exceed half of the total number of points allowed for the part under consideration. A cut should not be made for less than one-fourth of a point.

The following is a more detailed consideration of the scoring of the animal:

DRAFT HORSES.

GENERAL APPEARANCE.

Height.—The height of a horse is measured in hands (a hand is four inches), the measurement being made from the top of the withers to the ground. (Fig. 6.) The ideal draft horse should be over 16 hands and under 17½ hands in height. It is desirable that the students acquire accuracy in estimating the height as well as the weight of a horse. At first a hand stick, or hippometer, a measuring staff marked off in hands, will be found useful.

Weight.—Draft horses may be divided into three classes according to weight. Light draft, 1,500 to 1,600 pounds; medium draft, 1,600 to 1,800 pounds; and heavy draft, 1,800 pounds and over. The importance of weight should be emphasized. Other qualities being equal, the heavier horse can draw the heavier load. Not only will the extra weight be brought against the load, but it will also give the heavy horse a firmer footing by increasing the friction between the shoe and the hard pavement. Students should make individual estimates of the weight of the horse, and the teacher should have

these estimated weights corrected by comparison with the weight as shown upon accurate scales.

Form.—A broad, massive, low-set form will bring the center of gravity near the base of support and thus make the equilibrium of the horse more stable. The general form is due to the legs as well as the body, so the body and legs should be well proportioned. To take in the form well the students should note the horse carefully from the front, the rear, and both sides at some distance. (Fig. 7.)

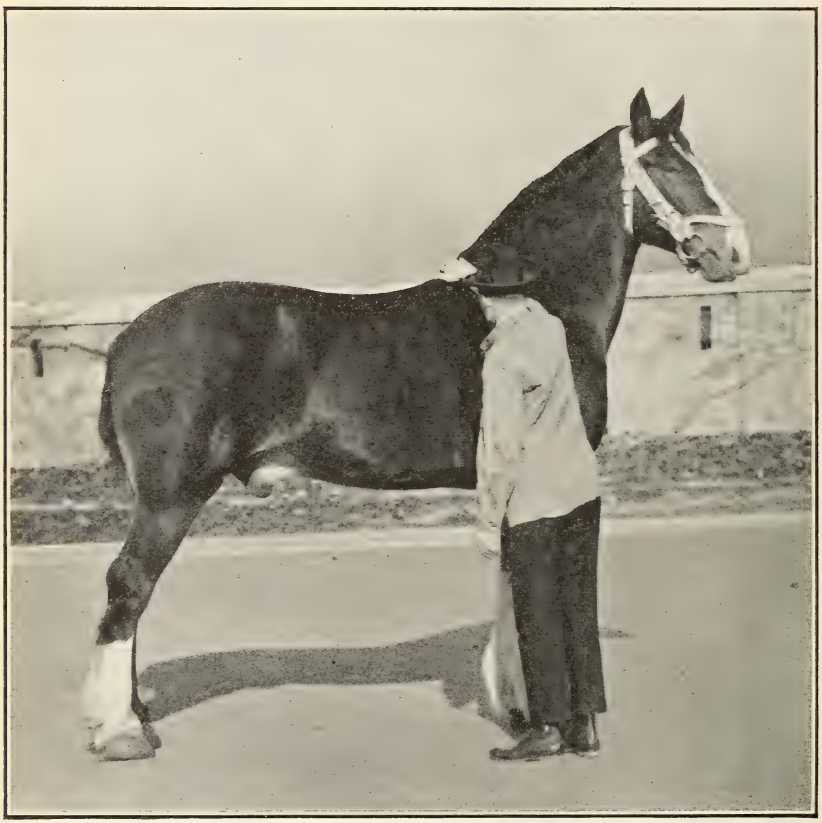

FIG. 6.—Student estimating the height of a horse.

Quality.—Quality is a rather comprehensive term, difficult to define, although it is understood by all judges of live stock. It has reference to evidence of refinement as opposed to coarseness. There is a correlation between the exterior of a horse and its internal anatomy. A pliable skin, with soft silky hair is evidence of health and the normal functioning of internal organs. Such skin and hair is associated with well-defined tendons; smooth, well-developed, muscles; strong, smooth bone; clean, well-defined joints; and dense, sound hoofs. Quality is often associated with style, spirit, and speed.

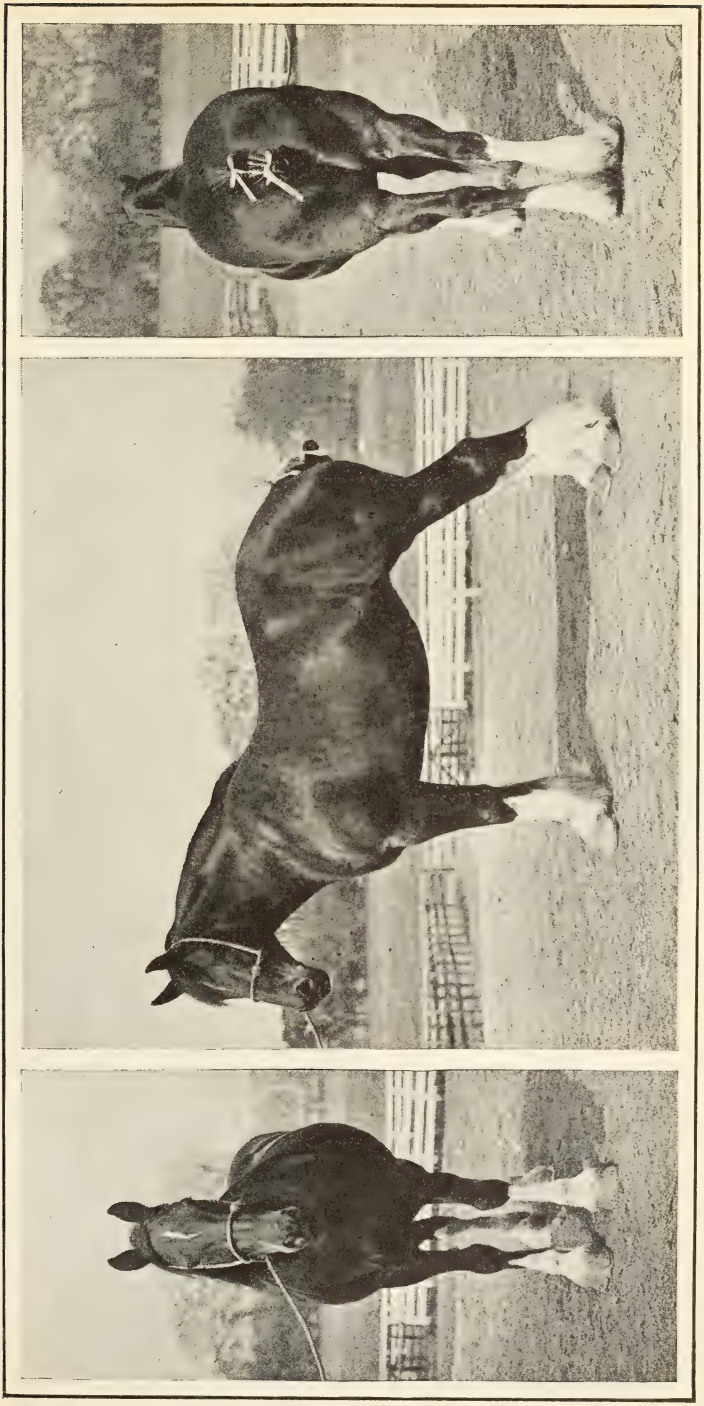

FIG. 7.—Front, side, and rear views of draft horse.

While one can not expect the highest quality in draft horses, there should not be a tendency toward undue coarseness which would indicate weakness. As extra weight is likely to be associated with coarseness, and as the combination of weight and quality is especially desirable, special attention should be paid to the quality of extra large horses. The students should look to quality as shown in the legs. The cannon bone especially should be clean, with a well-defined tendon behind. In the case of the breeds which have long hair, or "feather," upon the lower leg and coronet the fineness of the hair is given considerable attention as an indication of the quality of bone and hoof.

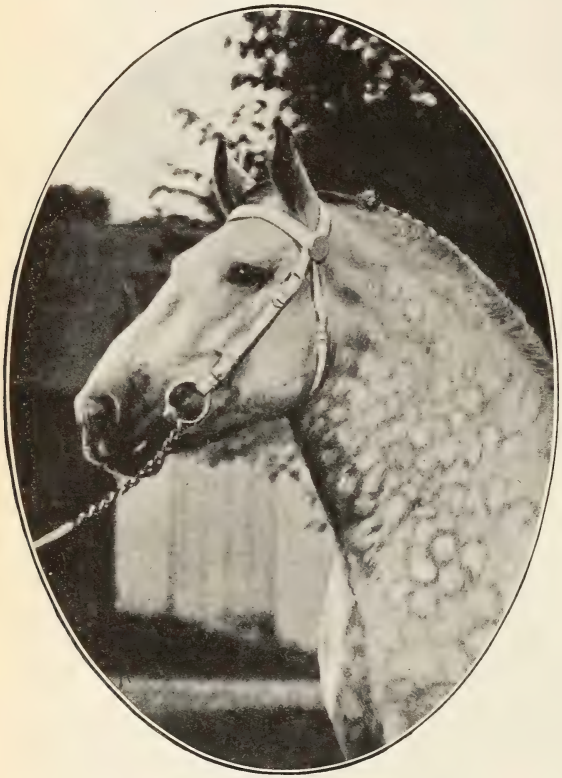

FIG. 8.—A good head.

Temperament.—While the draft horse should be lively, energetic, and vigorous, he should be of a docile disposition, manageable at all times, and give evidence of intelligence. Excessive nervousness as well as a sluggish temperament should result in a cut in the score. The student should be observant of bad habits and vices and make deductions for them under temperament.

HEAD AND NECK.

Head.—The head should be proportionate to the body in size. It should show character and have a pleasing appearance. (Fig. 8.) There should be freedom from excessive flesh, coarseness, and irregularities. The appearance of the horse depends much upon the manner in which the head is carried.

Muzzle.—The muzzle should be large, the lips thin, and well controlled, covering teeth which meet evenly. Large flexible nostrils indicate good breathing power. There should be a healthy pink

color to the lining of the nostrils and an absence of ulcers or a bad odor which might indicate disease.

Eyes.—The eyes should be full, bright, large, and mild and should be free from cloudiness, specks, and white spots.

Forehead.—The forehead should be broad and full, neither dished nor too prominent. Good width between the eyes indicates intelligence. While there is a tendency toward the Roman nose in some breeds, the straight-face profile is preferred.

Ears.—The ears are listed upon the card as medium in size, which means that they should be in proportion to the size of the horse, not too small, not too large. They should show good quality, should be soft and pliable, free from coarseness, being active and alert.

Neck.—While the neck should give evidence of strength, it should be free from thickness and coarseness. It should fit neatly into the head at one end and into the withers and the shoulders. The crest should be high, i. e., the neck should be arched well, with no tendency toward a "ewe neck," which term is applied to a neck too bulging and thick along the lower border. A large windpipe indicates ability to breathe well. Jawbones placed wide apart indicate capacity in chewing food.

FOREQUARTERS.

Shoulders.—A draft horse should have such a shoulder that the work collar will fit smoothly and with comfort. To accomplish this purpose, the shoulder should not be too steep. Occasionally one meets draft horses with shoulders too sloping. A moderate slope is desirable. The shoulder should be free from all coarseness and roughness and so muscled as to be smooth.

Arm.—The part formed by the arm bone, or humerus, extending from the point of the shoulder to the elbow is known as the arm. The arm should be short, heavily muscled, and should slope backward from the point of the shoulder to the point of the elbow so as to bring the leg in such a position as to properly support the weight of the forequarter.

Forearm.—The forearm extends from the elbow to the knee. It should be long, heavily muscled, flat, wide, and free from coarseness. The size of the forearm depends upon muscular development, since no fat is placed upon it. The development of the forearm is therefore noted as an indication of muscular development in other parts of the body.

Knees.—It is very important that the knees be not only large but also so strongly developed and so perfectly set as to carry well the weight of the body. As much work devolves upon this joint, there are apt to be blemishes which indicate weakness or a tendency to fall-

ing. Smoothness, which indicates quality and freedom from any tendency toward blemishes is as important as size.

Cannons.—The part of the leg from knee to fetlock is known as the cannon. The cannons should be short and strong. Large sinews set back well from the bone will give them a flat appearance, which is desirable. When long hair or "feather" is present it should be fine and silky as an indication of the quality and strength of bone and sinew.

Fetlocks.—The fetlocks, like the knees, are joints which must withstand much strain, and which must be wide, straight, and strong to withstand it. It is very important that they be free from blemishes.

Pasterns.—The pasterns, like other parts of the leg, should give evidence of clean, strong bone. The length and slope of the pastern is important. Short, upright pasterns prevent a springy, elastic action in placing the feet, and are apt to send a jar through the body when weight is thrown upon the foot. While long pasterns with too great a slope are less frequently met with in the draft type, they are undesirable, as they tend toward weakness. Moderately long pasterns with a slope of 45° are most desirable.

Feet.—Close attention should be given the feet. They should be large, smooth, and symmetrical in shape, giving every evidence of strength and quality. It is more important that the hoof be of good texture and of the proper shape than that it be of a dark color. (Fig. 9.) The sole should be cupped, not flat or bulging. The frog should be large and elastic, the bars prominent. The horn of the hoof should be smooth and waxy, free from cracks, ridges, and scales. The hoof heads (coronets) should be open and wide at the heel.

Legs.—After each part of each leg is considered the forelegs may considered in relation to the body. As suggested on the score card they should be straight, so that when viewed from the front a perpendicular line from the point of the shoulder should fall upon the center of the knee, cannon, pastern, and foot. (Fig. 10.) From the side a perpendicular line dropping from the center of the elbow joint should fall upon the center of the knee and pastern joints and back of the hoof.

BODY.

Chest.—A roomy chest is an indication of strong constitution. A narrow chest does not give room for the large heart and lungs which the vigorous, powerful horse should possess. The chest should be wide and deep when viewed from the front and from the side. Room for the vital organs should be secured by depth as well as breadth, because a chest too wide may not be consistent with good action.

Ribs.—The digestive organs of the animals lie within the so-called barrel. The capacity of the barrel depends upon the ribs. If the digestive organs are to have room the ribs must be long and well sprung. Ribs close together and close up to the hips are associated with strength and good feeding qualities. Ribs with loose coupling not carried close up to the hips indicate weakness and poor digestive powers.

Back.—Ribs well sprung will give breadth to the back. The back should not only be broad but also straight, short, and muscular. Its general appearance should be that of great strength and compactness.

Loin.—The part of the back not supported by the ribs is known as the loin. If the ribs are carried close up to the hips the loin will be short. With the back is should be straight and wide and give evidence of strength.

Underline.—The underline should run back well, full and low. If it is cut up at the flank it will denote the lack of capacity associated with a horse hard to keep fat.

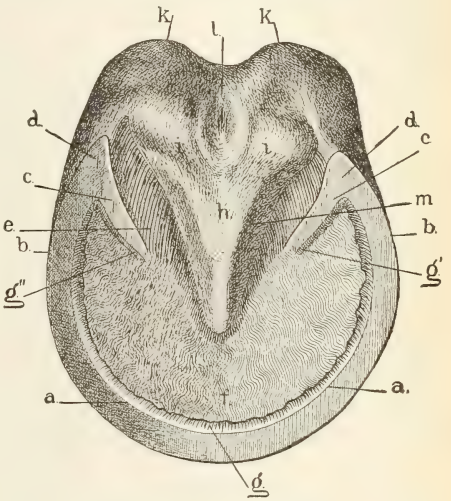

FIG. 9.—Ground surface of a right fore hoof of the regular form: *a, a,* wall; *a–a,* the toe; *a–b,* the side walls; *b–d,* the quarters; *c, c,* the bars; *d, d,* the buttresses; *e,* lateral cleft of the frog; *f,* body of the sole; *g, g', g''*, leafy layer (white line) of the toe and bars; *h,* body of the frog; *i, i,* branches of the frog; *k, k,* horny bulbs of the heels; *l,* middle cleft of the frog.

HINDQUARTERS.

Hips.—The hips should be wide and smooth and free from angularity and coarseness. As the muscles of the upper region of the hindquarters are important in the movement of heavy loads, there should be plenty of room about the hips and croup for thick muscle.

Croup.—While draft horses are not carried out so well in the croup as horses of lighter type, there should be no excessive drooping. A steep, short croup does not give room for the necessary muscle, hence is an indication of weakness.

Tail.—The tail itself is not important except as a factor in the appearance of the horse and its comfort during fly time. While it can not be expected that the tail of a draft horse will be carried with the style of a lighter harness horse, it should be attached fairly high and carried well.

Thighs and quarters.—The thighs extend from the hips to the stifles. The plump muscles of the thigh seen from the rear are known

FIG. 10.—Good forequarters.

as the quarters. Thighs and quarters should have strong muscles extended down well to the stifles and gaskins.

Stifles.—These joints correspond to the knee of a man. They should be strong, clean, and muscular, and so set as to allow freedom in action. It is better to have them turn outward slightly than to have them turn inward.

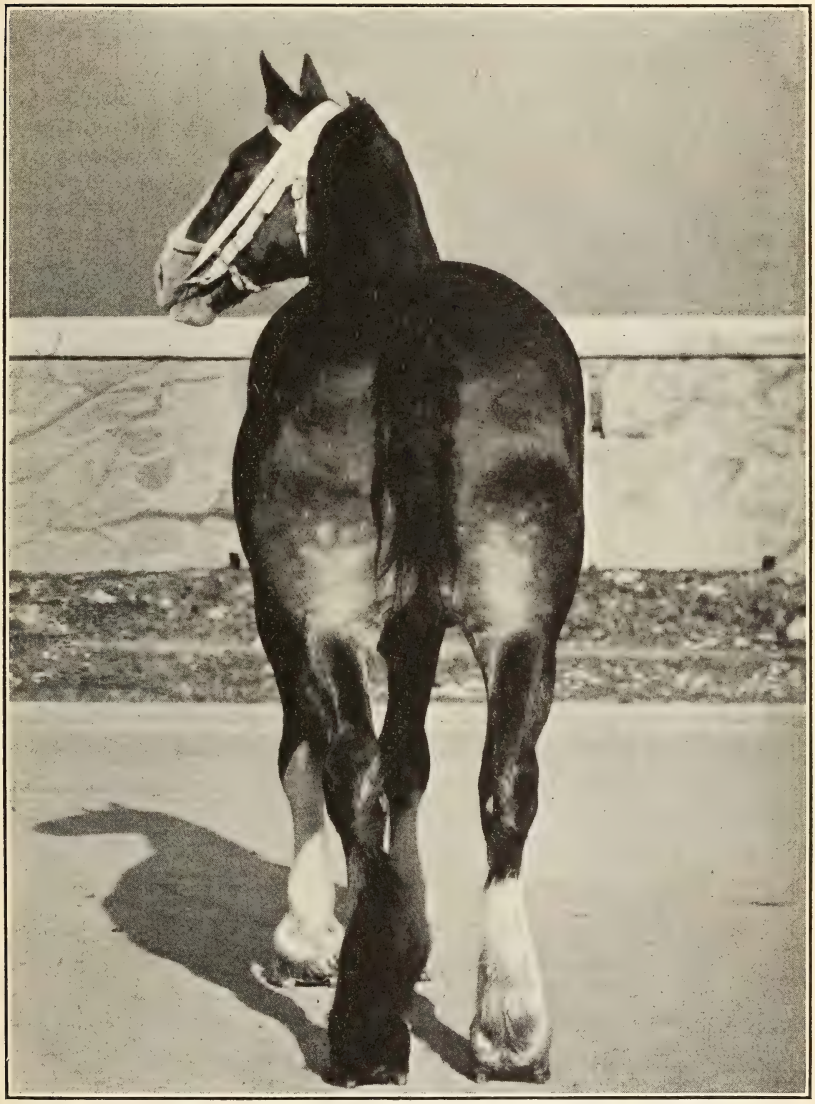

FIG. 11.—Good hind quarters.

Gaskins.—The gaskins, or lower thighs, like the forearms, should be long, heavily muscled, flat, wide, and free from coarseness. The muscles should be prominent in front of the bone and carried well downward.

Hocks.—The hocks are even more important than the knees, as the strain of starting a load and heavy hauling devolves upon these joints. They should be perfectly sound and show great strength. To show strength they should be large, well defined, clean, and straight.

Cannons, fetlocks, pasterns, feet.—Statements regarding the lower part of the front leg will apply equally well to the corresponding parts of the hind leg.

Legs.—As the hind legs are more important in pulling a load, it is even more important that they are straight than it is that the front legs are not crooked. As suggested in the score card when viewed

FIG. 12.—Judging action. Horse moving away from student at a walk.

from behind, a perpendicular line from the point of the buttock should fall upon the center of the hock, cannon, pastern, and foot. (Fig. 11.) From the side, a perpendicular line from the hip joint should fall upon the center of the foot and divide the gaskin in the middle, and a perpendicular line from the point of the buttock should run parallel with the line of the cannon.

ACTION.

Walk.—Inasmuch as most of the work of a draft horse is done at a walk (figs. 12, 13, and 14) in the score this gait is given more weight than the trot. It is important that a working horse maintain a fast

walk throughout the day. The student should note the horse as he moves away at a walk. The walk should be straight, rapid, and well controlled. The joints should be fully flexed, and the hoofs turned up so that the shoe shows plainly. The hocks should be carried neither too wide nor too close together. The student should also note the horse carefully as he comes back at a walk. The feet should be lifted with a snap and move straight ahead. The flexing of the knee should not result in any outward spreading. The horse should also be taken past the students at a walk, when the length of the stride and the flexing of the joints may be noted to better advantage.

FIG. 13.—Judging action. Horse moving toward student at a walk.

Trot.—The trotting of the horse should be noted likewise as the horse is moving away, as he is coming toward the student, and as he is passing by. The action should be even and well balanced and should show spirit. If the feet are brought down too close together there may be interfering; if they are spread too wide there will be a spraddling gait. When the legs are placed too wide on the body there will be an undesirable rolling gait. The joints should be flexed well, that there may be no danger from stumbling. The stride should be long and even, and the feet brought down so that the heel meets the ground first. This latter action is associated with pasterns of good slope and gives a spring not associated with short, upright pasterns.

LIGHT HORSES.

Relation of form to function.—The demand made upon the draft horse is to pull a heavy load; this function is associated with weight and great strength. The demand made upon the light-harness horse is to move a relatively light vehicle at a rapid rate; this function is associated with a lighter, more angular form and great endurance.

GENERAL APPEARANCE.

Height and weight.—The most desirable height for a light-harness horse, or roadster, is from 15 to 15½ hands. They may range in

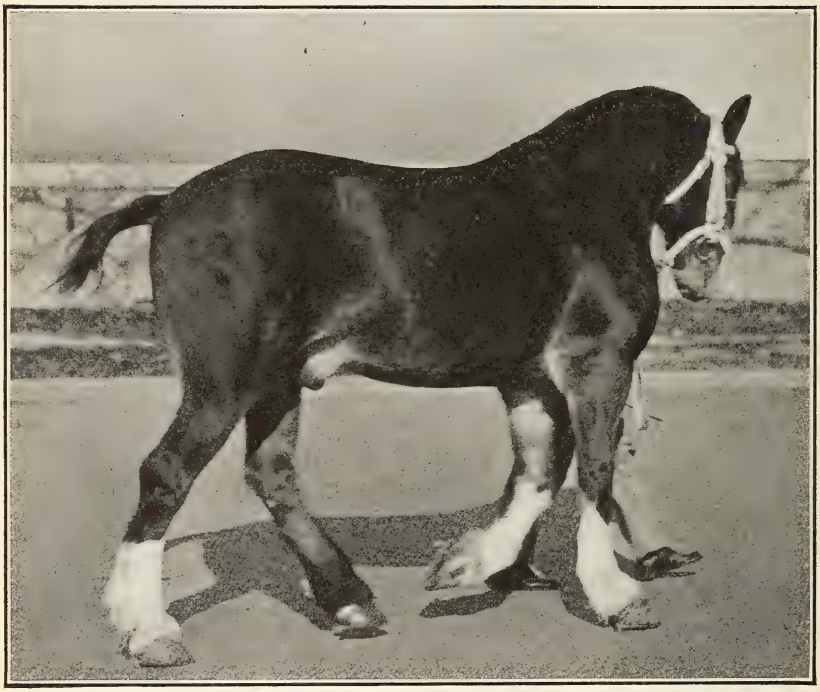

FIG. 14.—Judging action. Horse moving past student at a walk.

weight from 900 to 1,150 pounds, the weight most desired being 1,000 to 1,100 pounds.

Form.—Angularity with length of body and limbs is an indication of speed. There should also be sufficient depth of chest to indicate capacity of vital organs so closely correlated with stamina.

Quality.—In the light-harness horse there should be a complete absence of coarseness. There is a very close correlation between quality and endurance, as well as with style, spirit, and speed. It is especially important that the legs and feet show every indication of quality.

Temperament.—The temperament as reflected in action and general behavior should be very energetic, yet manageable. Horses true to this type are not often sluggish, although there may be a tendency toward excessive nervousness and even viciousness.

HEAD AND NECK.

That which is stated in regard to the head of the draft horse applies also to horses of this type, except that we may expect the head of the light horse to be somewhat more lean and angular.

While style and grace are desired in the neck of the light-harness horse, it will be long when compared with that of the draft horse, and may in some horses lack the pronounced style and symmetry of the coach horse.

FOREQUARTERS.

Clean and quick action will depend much upon the conformation of the shoulder. A long-reaching, clean action demands a shoulder long and oblique, extending well into the back. It is important that the covering of muscle should be smooth.

The statements made concerning the forelegs of the draft horse will apply for the most part to the light-harness horse. The length of muscle and bone will be proportionally greater in the light horse. There should be an absence of all coarseness, and every indication of quality.

BODY.

A strong constitution is indicated by the light horse more by depth of chest than by breadth. The ribs should be well sprung, deep, and close. The back should be short and well muscled as an indication of strength. The loin should be short and broad and the croup long and level. Both loin and croup should be well rounded out with strong muscles.

HINDQUARTERS.

As with the forequarters, so with the hindquarters, the limbs with their body connections should be constructed for speed. The muscles of the thighs, quarters, and gaskins should be long and heavy. The hocks should be wide, straight, and clean. The cannons should be comparatively short and give evidence of clean bone. The pasterns should have a good slope. The feet and legs should be given special attention.

ACTION.

It will be noted that the score cards give relatively more value to action with light horses than with the draft horses. The greater amount of value is given entirely to the trot. When we consider the functions of these classes of horses we see good reason for this. Spe-

cial attention should be given the trot or pace according to the directions given under the description of the draft horse. The light horse should not come down on his heels in a pronounced manner.

ESTIMATING THE AGE OF A HORSE.

Every student should learn to estimate the age of a horse. When a horse is scored each student should put his estimate of the horse's age upon the card. Horses of different ages should be selected in order that the student may note their development and have practice in estimating ages. (Fig. 15.)

Until a horse is over 10 years old the teeth furnish an indication of age which is fairly accurate. In estimating the age of a horse we consider only the three pairs of front teeth or nippers on each jaw. Horses, like human beings, have two sets of teeth; the first set, known as milk teeth, being replaced by permanent teeth. New teeth have deep cups, or indentations, at their centers. As the teeth wear down these cups disappear.

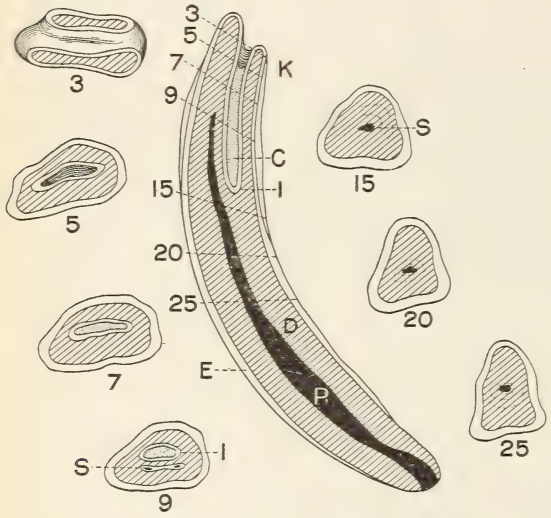

FIG. 15.—Age of horses as indicated by teeth.

Longitudinal section of left central lower incisor and cross sections of same tooth, showing table surfaces as they appear at the ages of 3, 5, 7, 9, 15, 20, and 25 years. C, Cement; I, infundibulum; D, dentine; K, cup; S, star; E, enamel; P, pulp cavity.

A colt does not usually get its first pair of nippers until it is a few days old, and has all three pairs by the time it is 6 to 10 months old. Until a colt is 3 years old, its general appearance is relied upon largely as an indication of its age. The following descriptions, with the accompanying illustrations, are intended to aid the student in getting an idea of the condition of a horse's mouth by years:

One year.—The center pair of milk incisors, known as the pinchers, and the pair next to them, known as the intermediates, are well through the gums and in contact, but the corner pairs do not yet meet on a level.

Two years.—The pinchers and the intermediates indicate that they are being crowded by the permanent teeth, as they are pushed free from their gums at the base. By the time the colt is two and a half years old the middle pinchers should be through. The permanent teeth are much larger than the temporary ones.

Three years.—The middle pinchers are large enough for use. Their deep cups show plainly. The milk intermediates are about to be shed.

Four years.—The permanent intermediates appear at three and a half years and are ready for use at four. The corner teeth give evidence that the permanent corners are coming. The cups in the pinchers are about one-third gone. (The tusks, or canine teeth, of male colts may appear about this time.)

Five years.—The temporary corner teeth are shed at four and a half and the permanent ones are ready to use. The horse has now what is known as a full mouth, all permanent incisors being ready to use. The cups of the first pair are about two-thirds gone.

Six years.—The cups in the center pair have nearly disappeared. In the second pair they are about two-thirds gone.

Seven years.—The cups from the second pair are now gone. There is a notch in the upper corner tooth where it overlaps the lower one.

Eight years.—The cups having all worn out of the lower nippers, we now look at the upper jaw. Although cups remain in the center pair, they are not deep.

Nine years.—The cups in the center pair of nippers on the upper jaw have disappeared. They are still present in the other two pairs, being fairly deep in the corner ones.

Ten years.—The cups are worn out of the second pair on the upper jaw, although they are still present in the corner pair.

Older horses.—At 11 years all of the cups are usually worn out of the incisors. It becomes necessary now to use some other indication of age. Estimation of age is now based upon the angle at which the teeth meet, their change in size and shape. As the horse gets older, the teeth meet more and more at an acute angle; that is, the jaws become more oblique. As the teeth wear down, the shape of the worn ends changes from oval to more nearly round and finally, in an aged horse, to a nearly triangular form. Students should note the difference in the shape of the teeth in younger horses. Sometimes cups are cut or burned in the teeth of old horses to make their mouths resemble those of younger animals. This practice, known as "Bishoping," may be detected if the shape of the tooth and the absence of the ring of enamel which surrounds the natural cup are noted. After a horse is 12 years old its condition is more important than its age in determining values.

ESTIMATING MATTERS OF UNSOUNDNESS.

Sound horses should be selected for practice judging until the students have become well acquainted with the score card and have developed fairly good ideals. A sound horse is one which has no imperfection of so serious a nature as to interfere with its usefulness. Anything, such as a wire cut, which mars the appearance of a horse without detracting from its usefulness is known as a blemish.

The matter of detecting unsoundness is very important in judging horses, as many forms of unsoundness not only unfit a horse for hard work but also unfit it for breeding purposes, as the unsoundness may be transmitted to the offspring. It is a question, however, as to just how far the high-school student may enter into this study. A

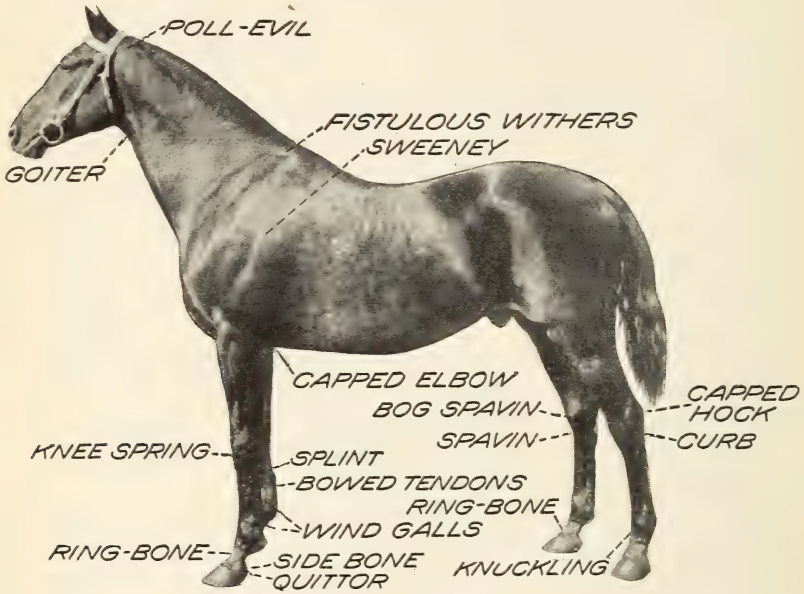

FIG. 16.—Location of common unsoundness.

knowledge of many of the troubles which detract from the value of horses is based upon principles of veterinary science not commonly taught in the high school. Only the more common and important defects and diseases are listed below under the part affected. (Fig. 16.) The extent to which the class will consider matters of unsoundness and disease should depend upon the training of the teacher and the preparation of the students. An effort should also be made to meet local conditions and needs.

Eyes.—The student should gain assurance that the horse is not blind. Blindness may frequently be discovered by placing the hand gently in front of the eye, and moving it gently directly away from

the eye so as not to create air waves which might cause a blind horse to close the eyelids. An inclination to shy readily may indicate defective vision.

Ears.—If the ears are kept rigid it may indicate deafness. If the ears are used excessively it may indicate defective sight, as a horse which does not see well will use his ears to the fullest extent to assist his eyes.

Nostrils.—The nostrils should show a healthy pink color and be free from discharges which might indicate some disease.

Mouth.—The lips should not be torn and should be free from any sores caused by the bit. See that the tongue shows no evidence of mutilation. Good teeth will meet well all around. A strong odor from the mouth may indicate decayed teeth. Look at the under jaw for abcesses and tumors.

Neck.—The neck may be left stiffened by a case of poll evil, which is a fistula or enlargement of the poll containing pus. This trouble may reappear.

Withers.—A similar fistula may occur upon the withers. These fistulas may be chronic and difficult to heal, or when healed leave bad scars and stiffness, which would constitute unsoundness if the serviceableness of the horse is interfered with.

Shoulders.—There may be a wasting away of the muscles, causing what is known as sweeney.

Knees.—The knee may be bent forward, causing what is known as "sprung knee," or it may be bent backward indicating "calf knee," which is caused by an inherited defect of conformation. Look also for puffs or swellings.

Cannons.—Associated with the cannons are two small splint bones. There may be abnormal bony growths about these bones which are known as splints. Small splints may not cause lameness, and if found on young horses may be classed as blemishes, since they may disappear as the horse grows older. A splint is considered serious if located so as to interfere with the action of the tendon or so close to the knee joint as to interfere with action.

Fetlocks.—Wind galls and sores due to interfering may be present and are classed as blemishes unless they produce lameness.

Pasterns.—Ringbones may be found upon the pasterns. These are bony growths which may encircle the bone partially or entirely. They may be up near the fetlock, but are more commonly down lower where the hoof joins the pastern. A well-developed ringbone has a bulging appearance and is readily seen. A small form may need the hand for detection.

Hoof heads or coronets.—Side bones are abnormal bony growths appearing as a swelling under the skin in the region of the coronet. They are common only upon the front feet. They have been de-

veloped by the cartilage changing to solid bone. They may cause lameness and pain, especially when the horse is driven on hard pavement. A fistulous abscess, known as quittor, may also occur upon the coronet.

Feet.—Founder is indicated by rings and ridges around the hoof wall, an abnormal projection of the toe, and a convex sole. (The rings and ridges are close together at the toe and diverge toward the heel.) Founder also causes lameness. Weak feet are subject to cracking. A crack in front of the foot is known as a sand crack, and those on the quarters are known as quarter cracks. Upon the soles of the feet there may be corns, or a diseased condition of the frog known as thrush.

Hocks.—It is very essential that the student knows the structural outline of a perfect hock, otherwise it will be difficult to detect certain unsoundness common to this region. Thoroughpin is one of the troubles often difficult to detect. It consists of a soft swelling having its origin between the tendon and the bone, appearing just above the hock.

There may be associated with thoroughpin a trouble known as bog spavin. This trouble is found in the depression that occurs on the inner forward part of the hock. It is caused by the oil from the joint accumulating and forming a soft swelling. Sometimes the term blood spavin is applied to these swellings and to an enlargement of the vein that passes the hock from the front. None of these troubles are considered unsoundness in a technical sense unless they are productive of lameness. Just under the hock at the rear the ligaments may thicken, forming a bulging calloused enlargement known as a curb.

The worst trouble of the hocks and the most common is bone spavin. Nature in her attempt to strengthen a weak hock often causes a deposit of bone about the joint. Needless to state that this interferes with action, causing lameness. The lameness usually lessens with exercise.

Stifle.—Be sure there are no swellings about the stifle.

General unsoundness.—It is necessary to drive a horse hard for some distance to determine if his wind is sound. By stopping him quickly and listening in a position close to the neck it may be determined whether the breathing is natural. There may be a roaring or whistling sound indicating disorders of the air passages. Irregular, spasmodic breathing indicates heaves, another unsoundness of the horse.

Vices.—Such vices as kicking, balking, shying, and a tendency to run away are not met with in draft horses to the extent that they occur in lighter horses. Stable vices such as cribbing, weaving, tail rubbing, and halter pulling, as well as the vices mentioned above,

detract from the value of the horse, although they are not considered unsoundness.

COMPARATIVE JUDGING.

The score card has been used in order that the student might establish in his mind an ideal of a draft horse. The judging so far has been a comparison of the horse judged with the ideal. The use of the card should have trained the student to examine the horse in a systematic manner, taking in all details. After these aims have been attained the student is ready for work in comparative judging; that is, in comparing a horse with other horses in place of comparison with the score-card ideal.

In considering the superiority of one horse over another, it is necessary to merge details into more inclusive qualities or characters which affect values directly, such as size, conformation, quality, temperament, action, and soundness. It is well to have students begin by making comparisons in simple features, placing the horses as to weight, quality, or general conformation. As they become proficient in making comparisons, a number of horses may be placed according to their market or breeding values. Horses of marked differences may be chosen at first, and later horses more nearly equal may be used. Each student should write a report covering his reasons for placing the horses. These reasons may be graded by the teacher and discussed later in the class.

DEMONSTRATIONS.

Demonstrations are usually conducted by the teacher or some expert induced to point out the good and bad points for the benefit of the class. After the students have developed proficiency in judging, a member of the class should be called upon to discuss the merits and defects of an individual or to give his reasons for placing in comparative judging in the presence of the animals.

Judging at fairs.—Competitive stock judging at fairs and stock shows has become very popular in some sections. If these competitions are conducted honorably and with the students' development paramount, they have high educational value. Whether students enter a judging competition or not, much may be learned by the student at these shows. A progressive teacher will take advantage of live-stock exhibitions and will aim to organize the students and supervise their visit so that maximum results may be obtained. The better fairs not only give the students an opportunity to see the best horses of the section represented, but they also give them an opportunity to observe the methods of judges of experience. The work of the judges should be observed closely by the visiting class, and explanations of reasons for their placing noted carefully. The fairs give an

opportunity for comparison of types and breeds which is seldom found in the school district.

At some of the schools local fairs are held in connection with the work in stock judging. Such exhibitions aid in arousing interest in better animals as well as give students practice in judging. A program may be given in connection with the show. While men well qualified should give the main addresses concerning horses, a place should be reserved for the members of the class. A debate on some question pertaining to types and breeds of horses should be interesting as well as instructive.

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